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Urine.*

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At the outset I wish to acknowledge the compliment which this Society has paid me by inviting me to read a paper. The selection of a subject suitable to these occasions is not by any means easy, especially if one wishes to avoid encroaching upon papers which have been previously read. I venture to think that a discussion upon urine is one which has received very scant attention in the past, a fact which is somewhat extraordinary in view of its undoubted importance as a diagnostic aid.

Before I commence, I wish it to be clearly understood that I am not presenting this paper in the guise of a urologist, and I claim no superior knowledge of the subject. My intention is to deal with the matter solely as a clinician, with intent to emphasise the value of the study of urine, both normal and pathological.

Diagnosis, after all, is by far the most difficult problem the practitioner has to face, and he should become cognisant of every method which is likely to lead to a correct conclusion. In the past I have often found that a systematic examination of a patient's urine has given me a clue upon which to base a diagnosis. When it has failed to do this, it has at least yielded negative information and has impressed the client that an intelligent interest has been evinced in the case. In any case of doubt, therefore, or in any instance in which it might be considered helpful to know the condition of the urine, it is a good plan to request the client to send along a sample of the animal's water in a bottle. A fee can, of course, be charged for such tests as are carried out.

The easiest way for an owner to collect a sample of dog's urine is to house the animal in a box or cage for a few hours, on the floor of which an old tea tray has been placed. The veterinary surgeon can, of course, obtain his sample by catheterisation. What he can learn from it will be subsequently related.

I think it desirable, before proceeding to the clinical aspect of this subject, to refresh our memories concerning the physiology of it.

Excretion of Urine.

Let us briefly consider the source and function of urine. As the foods and tissues of the body may both be divided into nitrogenous and non-nitrogenous substances, so also the excreta of the body may be similarly divided. The non-nitrogenous waste products are eliminated by the lungs, and to a very much less degree by the skin, in the form of water and carbonic acid. But a very large proportion of the waste products are nitrogenous, the special means for their elimination being the renal organs or kidneys. A process of oxidation in the innermost substance of the body converts the internal waste matter into ammonia, urea, uric acid, and certain other acids and salts. The kidneys extract all these, with much water, from the blood, and so form urine, thus supplementing the activities of the lungs, by the removal of matters which escape the action of the pulmonary organs.

Blood reaches the kidneys, as we know, almost direct from the posterior aorta, and is therefore as pure as when it leaves the left ventricle. In circulating through the kidney it is still further purified by the loss of its nitrogenous waste matter, and it also loses more carbonic acid by the formation of urine than it acquires by any wear and tear of the tissues of the gland. Thus, blood leaving the kidney is at its maximum of purity and oxygenation.

Contents of Normal Urine.

The constituents of normal urine are many and varied, and differ according to the species of animal under consideration. Some of the best known, which may be enumerated, are: water, ash, urea, uric acid, hippuric acid, ammonia, phenol, benzoic acid, organic and inorganic sulphur, phosphoric acid, lime, sodium chloride, creatinine, colouring matter, and many salts. In fact, it contains the bulk of the waste nitrogenous products, a few of the non-nitrogenous, and most of the saline products of the body. As has been pointed out, the chief constituents of urine are not prepared in the kidneys but only separated by them. If we regard an excretion as something removed from the system which is no longer required, and the retention of which would be harmful, then really urine is not a *se*-cretion (as people so often say) but an *ex*-cretion.

But the function of the cells of the tubules does not end with the removal from the blood of the substances presented to them, for they are capable of forming new material. Thus, Smith points out that the union of glycerine with benzoic acid, and resulting in the formation of hippuric acid, takes place in the cells of the tubules—especially of herbivores. Again, mucin, so prominent a feature in the urine of the horse, must apparently also be prepared by the cells of the tubules, or those of the pelvis of the kidney, because, being a colloid, it cannot escape through the glomeruli by filtration. It is probable, also, that changes may occur in the cells which lead to the production of colouring matters.

Several kinds of pigment have been isolated—or rather detected—in urine, the most important being urochrome (an oxidation product of urobilin).

I shall not weary you by going into details regarding the proportions of the contents of urine, because these vary so very widely—not only in different species of animals, but also in different individuals of the same species.

Analyses of urine samples taken from the various species of animals prove that whilst there is no great divergence between those of the herbivorous animals, these differ distinctly from those of the carnivorous or omnivorous

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species. In other words, the urine is fairly characteristic to each species. The explanation of these differences seems to be entirely connected with the question of food, for it has been found that when herbivora live on their own tissues, as during starvation, or under pathological conditions, they become carnivora and their urine alters in character corresponding now to that of flesh feeders. This fact might be of considerable usefulness in litigation cases where starvation is suspected. It is impossible to give an exact composition of the urine of the dog, as the amounts of constituents secreted vary considerably according to the nature of the diet.

Urea. Urea is the chief organic constituent of urine and the most important nitrogenous waste product found therein. It is formed by the disintegration of protein, one gramme of which yields ½ gramme of urea. Normally, the amount of urea excreted varies greatly with the diet; it is most abundant after an exclusive meat diet, less abundant after a mixed, and least abundant after a strictly vegetable diet. Strangely enough, however, it has been observed that in herbivora living principally upon hay, more urea is excreted than on a diet consisting of *oats* and hay.

Urea is a readily crystallisable, water-soluble substance, which gives off ammonia upon being heated. Stale urine becomes ammoniacal in consequence of the breaking up of urea into ammonium carbonate. This process may also occur in the bladder under pathological conditions. As urea is the most abundant solid of urine, it influences the specific gravity most, which latter will give an approximate idea of its increase or decrease. The horse is said to excrete about 3½ ounces daily. In dogs the urea content is from 4—10 per cent. of the total.

Uric Acid. Uric acid is manufactured chiefly in the liver, by the disintegration and oxidation of nucleoproteins derived from the food or tissues. It is only feebly soluble in water, but readily soluble in alkaline solutions and glycerin. Anybody who has suffered from excessive uric acid, and passed the so-called gravel or grit in his urine will know that one of the basic treatments is the taking of lithia water, varalettes, or other alkalies. With alkaline phosphates uric acid forms an acid urate, and acid sodium phosphate results, which gives the reaction to the urine of the carnivora. The consumption by man, the dog, and the cat, of foods rich in nuclein—such as thymus, pancreas, herring roe and meat extracts, etc., increases the amount of uric acid produced. This disappears upon the substitution of vegetable food. Certain breeds of dogs (*e.g.*, Dalmatians) are stated to have a high uric acid elimination, but I know of no reason for this.

Hippuric Acid. The rich presence of hippuric acid is characteristic of herbivorous urine, especially in that of the sheep; it is entirely absent in that of carnivorous animals. A meat diet diminishes its excretion. It is formed by a union of benzoic acid with glycocoll, or glycin, in the kidneys and intestines.

Ammonia. Ammonia is, next to urea, the most important nitrogenous product of protein metabolism, and the quantity present in urine is an indication of the amount of acids being formed in the body. Ammonia plays an important protective rôle, "for acid substances, such as carbonic, phosphoric and sulphuric acids are produced in carnivora and omnivora as a result of metabolism, and these would prove highly poisonous were it not that ammonia—which neutralises them—is simultaneously formed. It is a rather difficult matter to increase the acidity of an acid urine. Mineral acids effect it, but if the acid be pushed too far, ammonia is split off from the protein in order to prevent toxic results. On the other hand, it is very easy to increase the alkalinity of an alkaline urine. It may be well to explain that the poisoning which occurs from acidosis is due to the reduced carrying power of the blood for carbon dioxide. In consequence, this substance is retained in the tissues—with fatal results. The administration of ammon. carb. by the mouth will not prevent this condition, since it appears in the urine as urea." (Smith.)

It would appear that ammonia can exist free in the urine (of the horse, at any rate) but it must not be forgotten that fermentation can take place in the bladder resulting in the production of ammonia before the urine is voided. If a glass rod, previously dipped in muriatic acid, be held over ammoniacal urine, a white cloud-like vapour arises.

The Inorganic Contents. The chief inorganic constituents of urine are the chlorides, phosphates and sulphates, which occur in combination with potassium, sodium, ammonium, calcium and magnesium. In the urine of the *horse* calcium and potassium salts predominate; sulphates and chlorides are abundant; phosphates being practically absent. In the dog and cat phosphates are very prominent. "It has been found that in ruminants the calcium salts are mostly excreted with the fæces, whereas in the horse they principally pass through the kidneys. More lime exists in the urine of the horse than is soluble in an alkaline fluid, so that it is found both in suspension and in solution; the amount in suspension increases with the age of the urine owing to the development of ammonia, until nearly the whole of the lime is precipitated." (Smith.)

It is easy to demonstrate that the turbidity of the urine of a healthy horse is due to calcium carbonate in suspension, for if we add an acid to a sample, there is profuse formation of a gas, leaving the urine clear and transparent. I believe that many people have regarded a turbid equine urine as an abnormal one, and have considered the deposit resulting from every evacuation to be a proof of some abnormality.

The fact is that no healthy horse passes anything but a turbid urine, sometimes with a considerable deposit, but always with a deposit. It is no uncommon sight to see horses urinating in the stable or in the street, and leaving a patch of yellow, sandy-looking material, wherever the water was voided.

It is really remarkable that vesical or other calculus is so rare in the horse, when one realises how much more mineral matter exists in the urine than can be held in solution.

Examination of Urine.

Urinary analysis, in order to be thorough and of practical value, must necessarily be physical, chemical and microscopical. Chemical examination, although of great importance, can never alone lead to a correct diagnosis. Only through the use of the microscope can the nature of a disease in the genito-urinary tract, as well as its exact location, be revealed. In the majority of cases the simpler

tests alone will be required. These must be made first with a view of determining the character and amounts of the normal constituents of the urine; secondly, for the purpose of discovering the presence of any abnormal constituents.

An increased or diminished amount of any ingredient does not necessarily mean a pathological condition, although when this increase or decrease lasts a long time, a diseased condition becomes certain.

When possible, the specimen examined should be a portion of the mixed urine passed in 24 hours. If only one sample is obtainable, it should be from urine passed about three hours before taking a meal. The sample should be placed in a tall glass cylinder or test tube, covered over and left for a few hours in a cool place; it is then most suitable for examination, as any suspended or precipitated substance will have settled to the bottom. Delay may be avoided by filtration, or by the use of the centrifuge. The clear or upper part of the urine is used for chemical tests, and the sediment for microscopical examination.

Physical Examination. Under this heading we must first endeavour to ascertain the total *quantity of urine* passed in twenty-four hours. This is not always possible with animals, but it is well to try for the information. It must be remembered that more urine is passed by day than by night—deviation from which is abnormal. The daily amount may be increased by excessive ingestion of food and drink, or of food rich in nitrogen; by exposure to cold, and diminution of sweat. Decrease may result from the opposite conditions, and horses at work excrete less than those at rest, no doubt owing to the loss by the skin. A decrease may indicate that the water of the body is being taken up through some other channel, as in profuse diarrhœa, great salivation, during the formation of pleuritic or peritoneal exudates, as in dropsy, or in fevers, etc. The amount of *water* excreted with the urine differs considerably with the various classes of animals. It is generally considered that in the horse, of the total intake of water, not more than one-third leaves the body by the kidneys. Experiments have proved that the mean was 8½ pints in the 24 hours. In the ox a larger amount of urine is passed—10 to 44 pints daily; sheep ½ to 1½ pints; pigs 2½ to 14 pints; dogs ¾ to 1½ pints; and my own observations show that cats normally pass about 2 to 4 ozs. daily.

Tereg (quoted by Smith) observes that the herbivora excrete 20 per cent. of water by urine and 80 per cent. by the lungs, skin and bowels; whilst carnivora lose 85 per cent. by urine and only 15 per cent. by lungs, skin and bowels.

We must note the *colour* of the fresh sample, and any change occurring when it has become stale. Acid urine is always darker than alkaline urine. The colour is pale when the amount is excessive, or when the pigment is lessened, both of which conditions occur in diabetes.

A reddish or orange-brown tint may indicate blood, bile or the use of drugs such as rhubarb, senna, santonin, and chrysophanic acid. Greenish or yellowish urine may be due to bile, or to the use of carbolic acid, cascara or other drugs. Pus or fat gives the urine a milky appearance; and it may be opalescent from the presence of bacilli or suspended matter.

Bile pigments are met with in the urine in all cases in which there is an obstruction to the outflow of bile from the liver, and they are seen in numerous pathological conditions of the liver, with or without the presence of jaundice. They may, furthermore, appear as a result of blood changes, and after hæmorrhages into the tissues. The condition is known as *choluria*.

Hæmatoporphyrin—a derivative of hæmoglobin—is present in very minute quantities in normal urine. It is greatly increased in croupous pneumonia, pulmonary tuberculosis, pericarditis, rheumatism, lead poisoning, etc., etc. Such urine has a dark, wine-red, bluish-red, or even almost black colour.

The *odour* of the sample is important. Normal urine may sometimes be described as aromatic (as in cattle); at others as slightly ammoniacal. After the ingestion of certain articles of diet, and after taking different medicines the urine emits a more or less characteristic odour. In man the eating of asparagus has this effect. The administration of turpentine produces a violet-like odour, whilst the scent of cubebs, copaiba, and oil of sandalwood can also be detected in the urine. Diabetic urine is said to have an odour like new-mown hay; decomposing urine is ammoniacal; and urine containing the *Bacillus coli* has a fishy smell. Sulphonal causes a fruity odour.

The pungent, and to most persons, disagreeable odour of the male cat is notorious. Yet it must be due to causes other than those which determine the essential function of renal secretion, since it is absent from the urine of the female cat, and also from that of the castrated male. The urine of all species of the feline family has a more or less powerful and disagreeable smell, but its odorous qualities differ much in different species.

The *consistence* of urine must be noted. Whilst horse urine is normally thick, other animals excrete a thin, water-like fluid. Bile and sugar make it less mobile; pus gives it a milky and ropy appearance, whilst fibrin causes it to set like a jelly.

At the March meeting it may be remembered that I showed a cat's bladder containing a quantity of jelly-like substance, which might have been due to mucin or fibrin; I am not sure which, but it caused a fatal result. The highest degree of viscidity is usually found in chronic cystitis, a disease from which this cat suffered.

Smith states that "the consistence of urine often depends upon sex, and perhaps on the season. It is certain that some mares excrete a glairy tenacious fluid which, owing to the amount of mucin it contains, can be drawn out in strings. It is very common to find the urine as thick as linseed oil, and very rare to find it fluid and watery. During œstrum the urine is of the consistence of oil. On a diet of oats and no hay the urine may be so mucinous as to pour like white of egg."

The *specific gravity* of urine is quite important, as it is an indication of the nature and amount of the urinary contents. In any species of animal, however, the specific gravity may be found to have a wide range without necessarily indicating disease. It depends so largely upon the nature of the food eaten, and the amount of dilution. The lowest specific gravity registered in the horse was 1·014, and the highest 1·050, the mean being 1·036. The urine of the ox has a lower specific gravity than that of the

horse—namely, 1·020 to 1·030; and according to Munk, that of milch cows may be as low as 1·006—1·015. In sheep the specific gravity is 1·006—1·015 and in pigs 1·003—1·025. In dogs the specific gravity is 1·016 to 1·060, dependent on the diet. The general rule is that the specific gravity is high in dark and low in light urine; but there are exceptions, for in diabetes mellitus the urine is clear and pale and has a high specific gravity, whilst in nephritis the urine is dark but has a low specific gravity. The dark urine of starvation also has a low specific gravity.

Reference to pathological variations will be made under the urinary disorders later to be described.

To ascertain the specific gravity of a sample of urine, the latter should be poured into a tall glass cylinder, and allowed to cool. A urinometer (exhibited) is then floated in the liquid, taking care that it does not touch the sides of the vessel. If the amount of urine passed daily be excessive the specific gravity may be low, such conditions probably indicating diabetes insipidus or chronic renal disease. Persistence of such a specific gravity, even without albumen, is a grave sign of failure in the aged.

A high specific gravity may be due to excess of urea or to the presence of sugar. An abundant urine with such a specific gravity is characteristic of diabetes mellitus, in which disease the specific gravity may reach 1·075, but generally ranges from 1·030 to 1·045.

The amount of solids in urine may be determined by evaporating a known quantity to dryness over a water bath, and weighing the residue.

Chemical Examination. The first point to determine under this heading is the *reaction*, for which purpose blue or red litmus paper is employed. Usually we may expect herbivorous urine to be alkaline, and carnivorous urine, acid. The acidity of dogs' urine is due to acid sodium phosphate. After feeding dogs for some time on bread, or on fat, the urine becomes alkaline; otherwise an alkaline reaction in the dog generally indicates catarrh of the bladder, or hæmaturia, or indicates the re-absorption of exudates or transudates.

In omnivora the reaction is acid or alkaline depending upon the nature of the food—an animal diet producing an acid, a vegetable diet an alkaline urine.

Some authorities assert that no *free* acid exists in the urine of any animal; others contradict this.

In febrile diseases, especially in acute rheumatism, the reaction may be strongly acid—at least, so far as flesh feeders are concerned.

The next procedure in chemical examination is to search for the presence of *abnormal constituents of urine*, not forgetting, of course, to ascertain whether the normal contents are present in their correct proportion. The abnormal constituents found in urine are (1) protein or albuminous substances, which include serum-albumin, serum globulin, mucin, fibrin, etc.; (2) blood and its derivatives; (3) carbohydrates, represented chiefly by grape-sugar or glucose; (4) acetone; (5) bile; and (6) pus. These are the substances sought for by chemical tests. There are still other abnormal constituents, but these are revealed only by the microscope. They are (7) blood corpuscles (red and white); (8) tube casts; (9) epithelial cells of all kinds; (10) pus cells; (11) fat; (12) bacteria; and (13) certain parasites.

Abnormal Urinary Conditions.

Now, as it is my intention to deal briefly with a number of abnormal urinary conditions, I think that possibly the better arrangement for my paper would be to incorporate the commoner tests under their specific headings. I think this will make for greater clarity and brevity.

Incontinence, or constant dribbling, of urine indicates paralysis or weakness of the bladder or its sphincter, arising from certain affections of the spine, or from acute cystitis, etc.

Anuria means the partial or complete suppression of urine, which may be due to renal or urethral calculus, obstructive growths or swellings, thus stopping the flow. On the other hand, the secretion of urine may have stopped owing to some well-marked disease in both kidneys, acute inflammatory conditions of the other organs, or in acute fevers. Ischuria is another name given to this condition. There is always a serious possibility that uræmia may complicate cases of anuria.

Dysuria. Difficult or painful urination is noted with urethral calculus, after certain poisons, and in urethritis, etc.

Polyuria indicates an excessive secretion and discharge of urine containing increased amounts of solid constituents. It must be distinguished from *Pollakuria*, which signifies frequent urination, without regard to the quantity of urine voided, and which usually denotes some irritation of the bladder.

The quantity of urine is increased in diabetes mellitus and insipidus, in hysteria, convulsions, convalescence from acute inflammatory diseases, hypertrophy of the heart, chronic nephritis, and especially cirrhosis of the kidney. It occurs when the kidneys are stimulated by certain drugs, *e.g.*, turpentine, spirits of ether, etc.; and it has been observed to coincide with the consumption by animals of mouldy hay. Increase may be due to the presence of a large amount of water in the blood (hydræmia), as in some cases of anæmia; or to atrophy of the kidneys, where there is a great re-absorption of exudates.

Diabetes insipidus is also known as polyuria, and is a chronic condition marked by great thirst and the passage of large quantities of urine containing *no* excess of sugar, and of low specific gravity. It is often attended by voracious appetite, loss of strength, and emaciation.

Glycosuria or *diabetes mellitus* is a much more serious condition, marked by the passage of excessive urine containing an excess of sugar. Hence the term, glycosuria. It is caused (at least sometimes) by a deficient secretion from the pancreas, and may be allayed by introducing into the blood stream an extract of the islet cells—called insulin.

Glycosuria is met with chiefly in old dogs, the urine of which is not only increased in amount but is generally of a high specific gravity, *i.e.*, 1·040 or more. Its colour is frequently pale or even straw yellow, and the sugar content may reach as high as 4 per cent. It is worth noting that, among other symptoms, chronic irritation of the skin, ulceration of the cornea and cataract of the lens, are sometimes present.

A transient glycosuria may be induced during pregnancy, after a diet rich in carbohydrates, or by poisoning with chloral, chloroform, opium, caffeine, or after large doses of thyroid extract; so that the temporary presence of grape

sugar in the urine, even in appreciable amounts, does not necessarily signify the existence of diabetes any more than the presence of albumen signifies the certain existence of a nephritis. When glycosuria has been long in existence, the animal begins to waste, its abdomen becoming pendulous the thirst is increased, sickness may occur, and debility is marked. An animal with these symptoms should certainly have its urine examined.

Test for Sugar. Before examining for sugar, any albumin in the urine should be removed by boiling with acid (citric or acetic) and subsequently filtering. Filtration is recommended with any urine. Certain of the tests depend upon the reducing power of certain sugars, and since both glucose and lactose give a positive result, these tests are not conclusive of the presence only of glucose, which is the only important sugar occurring in urine.

Glycuronic acid,which is an oxidation product of glucose, exists in traces in normal urine, but after the administration of camphor or chloral, it is obtained in well-marked quantities. It is a point of practical importance, therefore, to avoid regarding a urine which reduces salts of copper as necessarily containing sugars, for glycuronic acid is a reducing substance.

Perhaps the simplest test for sugar is the *Moore-Heller test*, the method being to pour into a test tube two parts of urine and one part of a 10 per cent. caustic potash solution ; boil the upper portion for two or three minutes. Phosphates—if precipitated in large amount—must be filtered off. When sugar is present, a change of colour will take place after boiling which can be approximately estimated as follows : 1 per cent. or less of sugar gives a canary yellow colour, the colour being somewhat more intense than that of the original unmixed urine ; between 1 per cent. and 2 per cent. gives a wine-yellow colour ; between 2 per cent. and 3 per cent. a sherry colour ; between 3 per cent. and 4 per cent. a rum colour ; and above 4 per cent. a dark brown or even black colour. This test is only a tolerably reliable one, but in many cases will answer the purpose.

The most commonly used methods of searching for sugar are the copper tests, of which the oldest is *Trommer's test*. To one or two parts of urine in a test tube, add one part of KOH or soda, adding drop by drop a 10 per cent. solution of copper sulphate, and shake until the mixture shows a blue colour. Heat the upper part of this mixture, and if sugar is present a precipitate of yellow cuprous hydroxide will result, which at first shows plainly in the bluish liquid but gradually spreads over the entire fluid and a red sediment of cuprous oxide is formed. This again is not a quite reliable test.

Fehling's test, whilst more complicated, is more reliable, and necessitates the use of two solutions which must be freshly made each time they are required. The first solution consists of 9½ drams of copper sulph. to 500 c.c. of water ; the second solution consists of 6 ozs. of potassium and sodium tartrate, and 100 c.c. of KOH solution, dissolved in sufficient water to make 500 c.c.

Equal parts of these solutions are mixed together in a test tube and boiled for a few seconds. If the mixture remains clear, add the urine to be tested drop by drop, at the same time continuing the boiling. If sugar be present a reddish-yellow precipitate of suboxide of copper is rapidly produced. Should no precipitate occur, add more urine, until an amount equal to that of the Fehling solution has been reached ; if then no yellow precipitate appears upon boiling, the urine is free from sugar.

This all sounds complicated, and several wholesale drug houses have overcome the difficulty by supplying the profession with soloids, tabloids, or other agents, which have only to be dissolved to form a solution ready for use. There are other tests, but I think I need hardly relate them all.

ALBUMINURIA. There are many proteins or albuminous substances which may be found in urine, but the chief clinical interest centres in serum-albumin, and by the term " albuminuria " the presence of these bodies in urine is usually meant. The detection of albumin in any appreciable amount must always be regarded as a pathological phenomenon, though it does not necessarily signify the presence of a renal trouble, because it may be due to a variety of causes. In most cases, however, in which albumin is found, a nephritis is present, and a microscopical examination must then be made to determine if possible the exact source of the albumen. If pus corpuscles and kidney epithelia (with or without casts) are found, a diagnosis of nephritis is justified.

Albuminuria may exist in such widely different cases as pyelitis, cystitis, prostatitis, urethritis and vaginitis, and the microscope will be needed to determine its origin.

Heat Test. In testing for albumin the urine must be clear, to ensure which filtration is advisable.

Boil some urine in a test tube ; if the reaction be already acid and the urine remains clear, no albumin is present. Opacity or precipitate indicates either phosphates or albumin. Add a few drops of acetic acid. If the urine becomes clear, the cloudiness was due to phosphates ; if it remains turbid albumin is present.

Nitric Acid Test. Put about 4 c.c. of pure nitric acid into a test tube, then allow a few drops of urine to trickle down the inside of the tube so that the fluids are not mixed. If after half a minute no opaque white ring appears at the junction, no albumin is present.

HÆMATURIA is a common condition and may be due to many causes, such as severe inflammations, concretions, calculi, tumours, traumatisms, tuberculosis, etc., and may arise from any portion of the urino-genital tract. The presence in urine of an abnormally large amount of salts may be sufficient to set up an irritation of the kidney or its pelvis, with the appearance of blood corpuscles. In veterinary practice, at least so far as dogs and cats are concerned, the majority of cases of hæmaturia seem to arise in consequence of cystitis.

It may be quite pronounced in cases of acute nephritis due to poisoning with different drugs such as carbolic acid, cantharides and turpentine. During œstrum the red cells are normally found in the urine of females, and with this exception, hæmaturia usually indicates some serious abnormality. When red blood corpuscles are present only in small numbers, the urine is either unchanged in colour or it is cloudy, turbid or smoky.

But when they occur in large numbers the urine has a reddish or dark brown hue. After the red cells have been a few hours in the urine, especially if it is alkaline, they lose their hæmoglobin and become colourless, so that they should be sought for as early as possible.

In severe cases of hæmaturia, the amount of albumin which may, by quantitative test, also be found in the sample may be as high as ½ per cent., yet the kidneys may still be perfectly normal.

In hæmaturia *of urethral origin* due either to inflammation or traumatic conditions, the blood oozes from the urethra between the acts of micturition, or may be squeezed out. In such cases as well as in *inflammations of the prostate* glands or seminal vesicles, the first portion of urine voided is liable to contain more blood than the last, which may even be practically free from blood. In hæmorrhage *from the bladder* the blood is apt to be more abundant toward the end of the micturition, while in hæmorrhage *from the upper urinary tract* the blood is liable to be evenly distributed, so that if the urine were voided into two trays, each would contain an equal amount of blood.

The source of the hæmorrhage can be positively diagnosed *only* from the epithelia and other elements in the sediment under the microscope.

HÆMOGLOBINURIA is a more rare condition, characterised by a dissolution of the red blood corpuscles and the appearance in the urine of the colouring matters of the blood in solution. The red colour of the urine which is always found in these cases is, therefore, not due to the presence of a large number of erythrocytes (as in hæmaturia) but to that of dissolved hæmoglobin.

The condition is seen after poisoning with different substances such as carbolic acid, sulphuric acid, naphthol, and even chlorate of potash—the latter especially in the cat. It may occur also in purpura, piroplasmosis, azoturia, during the course of severe infections as in Stuttgart disease and septicæmia, and after extensive burns.

The urine in hæmoglobinuria is always dark-red or brownish, the sediment being abundant. The specific gravity varies, but as a rule is rather increased. Albumin will be found in varying amount. The sediment contains an extremely large number of dark or rust-brown masses, made up of granular matter. These are the masses and granules of hæmoglobin. Red blood corpuscles are never entirely absent in these cases though they are scanty, and even in fresh urine they appear very pale and double-contoured.

Pus corpuscles and epithelia are also fairly abundant. Whilst the microscope is indispensable for differentiating between hæmaturia and hæmoglobinuria, there are certain chemical tests available for blood, but these can only prove the presence of pigment.

The Guaiacum Test is carried out by putting 4 c.c. of urine into a test tube and adding two drops of guaiacum tincture; then add 4 c.c. of ozonic ether without shaking. If blood pigment is present a blue colour appears at the lower level of the ether. As a matter of caution it should be stated that pot. iodide in urine gives a blue colour with the guaiacum test, but in this case the colour appears much more slowly than with blood, and appears simultaneously all through the fluid.

The Heller Test consists in adding caustic soda to 10 c.c. of urine in a test tube until the mixture is strongly alkaline. On boiling, if blood pigment be present, the deposit of earthy phosphates is brownish-red owing to admixture with hæmatin from the blood, whilst the fluid is bottle-green.

Spectroscope. There are spectroscopic examinations for blood pigments, but they are unlikely to be employed by the average clinician, and I shall not deal with them.

PYURIA. Whenever pus corpuscles are present in the urine, even in small numbers, an abnormal condition exists somewhere in the genito-urinary tract. As soon as they are found in at least moderate numbers, the diagnosis of an inflammation can at once be made, which is the more pronounced the greater the number of pus corpuscles; when they are very numerous, we may even be justified in diagnosing suppuration, though not without other features.

Urine containing pus corpuscles in small numbers may appear perfectly normal to the naked eye, but the greater their number the more turbid it becomes, and in urine in which they are abundant, a heavy greyish-white sediment will sink to the bottom in the course of a few hours.

In such cases the term pyuria might be properly used. The term "pus-corpuscle" is really a misleading one, since the presence of these cells does not necessarily signify the presence of true pus; they are found in the urine in every inflammatory condition, even in the mildest. The greatest numbers of so-called pus corpuscles are emigrated white blood corpuscles; hence the two terms "pus corpuscles" and "leucocytes" are frequently used synonymously.

The presence of these bodies in urine, therefore, simply signifies the existence of some abnormal condition somewhere in the genito-urinary tract, which may be a mere irritation, or mild inflammation, a severe inflammation, a suppuration, or even an ulcerative process, in accordance with the numbers of these cells, as well as with other features giving evidence of the character of the pathological lesion.

A Test for the presence of pus in a suspected sample consists in treating the urine or its sediment with a few drops of concentrated sol. of sodium or potassium hydrate, when, in the presence of pus in small amounts, the liquid becomes mucilaginous and ropy; in large amounts it is converted into a gelatinous mucus-like mass which adheres to the bottom and sides of the test tube.

CHOLURIA (or Biliuria). When biliary colouring matters appear in the urine, the latter takes on a dark yellow, brown or greenish colour. Upon shaking the urine in a bottle, a yellowish-green froth is easily produced. Bile pigments are met with in urine in all cases in which there is an obstruction to the outflow of bile from the liver, and are seen in numerous pathological conditions of the liver, with or without the presence of jaundice. Biliuria is frequently seen in the dog, and is mostly due to an obstruction to the excretion of bile; but it is often seen in catarrh of the intestines and in the abdominal form of distemper. Icterus is a common cause. Frōhner observed it in bronchial forms of distemper, in some diseases of the kidneys and in pleuritis. Bile acids in urine are of no diagnostic value in the dog. To detect bile in urine one employs *Gmelin's Test.* A small quantity of strong nitric acid is placed in a test tube along with a few drops of yellow nitrous acid. The suspected urine is gently floated down the inside of the tube, and if bile colouring matters are present, a set of concentric coloured rings will appear at the point of union; these rings from above downward will be green, blue, violet, red and yellow, the green being

predominant and indispensable in proving the presence of bile.

Ultzmann's Test. To 10 c.c. of urine add 3 c.c. of 25 per cent. caustic potash solution and an excess of pure HCl. If bile pigments are present the mixture assumes a beautiful green colour.

LIPURIA. In very fat animals, and especially in cats, fat droplets may be seen on the surface of the urine as a normal constituent. It may, however, also indicate fatty degeneration of the renal epithelium. The condition when pathological is called lipuria, and was observed by Friedberger and Frōhner associated with croupous pneumonia in animals with certain anæmic and cachetic conditions. Fat may render the urine more or less turbid, but the droplets may readily be revealed by the microscope. The addition of ether to such urine dissolves the fat and renders the fluid clear. As one usually oils a catheter before its passage, one must not be surprised to find traces of oil in the urine so obtained. Lipuria may be observed temporarily in healthy animals after a highly fatty diet, in pregnant females and in cases of phosphorus poisoning.

MICROSCOPICAL EXAMINATION.

Microscopical examination of urine is in many cases of greater diagnostic importance than chemical examination, for by its aid we are able to detect the presence of crystals and amorphous sediments, and distinguish one kind from another by their shapes and general appearances. We can detect epithelial cells, and from their appearance and characteristics can state their origin.

As already stated, one must first obtain a sediment either by the use of a centrifuge or by allowing urine to stand for some hours in a conical glass vessel. An acid urine which is perfectly clear when passed, may become turbid on cooling owing to the presence of a large amount of urates. An amphoteric or even faintly alkaline urine may also be clear and become more or less cloudy later, the change depending partly upon the salts, but mostly upon the development of bacteria of the fission fungi class.

Three minutes turning with a hand centrifuge will produce sufficient sediment. One of the chief advantages of the centrifuge is that bacteria are thrown down in large numbers and one's search for them is more successful. This is important in cases of suspected tuberculosis.

To mount the sediment, decant the upper portion of the urine, pour the sediment into a dish and transfer a drop of it to a slide by means of a camel hair brush. A cover glass is dropped on but not pressed down, for fear of altering the shape of epithelia.

Uric Acid. The factors which increase or decrease its amount in urine have already been enumerated. The crystals vary in shape and size, and are of a yellowish brown or reddish-brown colour. When present in large amount it becomes precipitated in the form of reddish masses which adhere to the sides of the vessel, producing the so-called brick-dust sediment. These masses are known as gravel or sand. The commonest form of uric acid consists of rhomboidal prisms with rounded or pointed ends. Another form, usually seen in highly acid urine and found in gouty or rheumatic conditions, appears in peculiar spear, comb and brush shapes. To ascertain their exact character a drop of some alkali such as caustic soda may be added to the specimen whilst being examined; the uric acid will dissolve readily. If, then, a drop of acetic acid be added, the characteristic crystals soon re-appear.

Triple Phosphates. The combined ammonio-magnesium phosphates are alkaline sediments so frequently thrown down in the urine of cats. The material which is often the cause of urethral obstruction in cats is composed of triple phosphates, the crystals of which, when examined under the miscroscope, are colourless, triangular or rhomboidal prisms having bevelled ends, and spoken of commonly as having a coffin-lid shape. Their amount is increased in chronic inflammatory conditions of all kinds, in rheumatic processes, in chronic cystitis especially, and their presence appears to be favoured by a vegetable diet.

Calcium Carbonate is the most common sediment in herbivorous animals and causes the turgidity of their urine. It is seen in the form of amorphous granules and globules of different sizes. By adding an acid such as acetic acid, effervescence is produced. In man, this salt appears mainly in inflammatory and carious processes of the bony system, such as osteitis, osteomyelitis, osteomalacia and rachitis.

Many other Salts appear in urine, but I have not time to deal with them this evening.

Fat globules, pus cells and erythrocytes have already been mentioned; but there still remain epithelia, tube casts and parasites.

Epithelia. Normally the only epithelia found in urine are the irregular flat epithelia from the bladder—in small numbers—the presence of all other kinds being pathological. There are three kinds of epithelia occurring in the body, *viz.*, flat or squamous, cuboidal, and columnar or cylindrical, and for purposes of identification and diagnosis one needs to make a special study of their characteristics as regards size and shape.

If *spermatozoa* are continually detected in urine, especially if in large numbers, a diagnosis of spermatorrhœa is justifiable.

Tubular Casts. Casts are probably the products of an albuminous exudation from the blood-vessels, with the addition of swollen and destroyed epithelia. Their appearance in urine is always of the highest diagnostic importance, and, if found in any amount, they indicate the presence of a croupous or parenchymatous nephritis, the more so the larger the amount of accompanying albumin. It has been asserted that a mere hyperæmia of the kidneys may suffice to throw casts into the urine, and also that casts can be found in small numbers when the kidneys are perfectly intact. In order, therefore, to guard against any errors in diagnosis it is important to look for other abnormal features in the urine when cast-like formations are seen. The centrifuge throws them down readily. Low magnifying powers are unreliable for their detection, and a power of at least 400 diameters should always be used. Blood cylinders indicate hæmorrhage of the kidneys.

Micro-organisms. Normal urine, when quite fresh, contains no organisms and may be considered sterile when obtained direct from the bladder. It may, however, become contaminated, when voided, by bacteria present in the urethra or vagina. Bacteria soon develop in stale urine unless the latter is kept very cool and air tight.

In pathological conditions, organisms may be present in large numbers, and the urine is then always rendered turbid, the condition being known as *bacteriuria.*

Non-pathogenic organisms may belong to the class of mould fungi, to the yeast fungi or to the fission fungi; whilst pathogenic ones belong only to the fission fungi. Both cocci and bacilli may be found. Of the former the most numerous are large cocci lying either irregularly or in small chain form—the *Micrococcus ureæ*. This coccus to large degree is responsible for the decomposition of urea into ammonium carbonate.

In urines containing pus corpuscles, both staphylococci and streptococci will also be seen. They are pathogenic and may be found in any inflammatory condition.

Numerous bacilli are associated with urine, most important of which are perhaps the tubercle bacillus and the *Bacillus coli communis*. The latter is frequently detected in cases of nephritis, pyelitis or cystitis, and appears to be a common cause of cystitis. The *Bac. coli* is a short, thick rod, found in twos, small chains or groups.

The fungus known as actinomyces is of rare occurrence in the urine, but is undoubtedly found in actinomycosis of the internal organs where the disease affects the urino-genital tract.

Animal parasites may be found in urine, either the eggs of the *Eustrongylus gigas* or the embryonic forms of *Filaria immitis*, so far as dogs' urine is concerned. Quite a number of such parasites have been detected in human urine, but I have little information or knowledge as to what others are found in urine of the various domesticated animals.

In concluding, I trust that this incomplete, although lengthy, discourse will stimulate members to rely rather more upon urine analysis as an aid to diagnosis, and I hope it will help them to realise what a great deal there is to know about urine and how important that knowledge can be.

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(To be continued with report of discussion.)

ABSTRACT.

[A Communication on Anthrax in the Pig. (Pacetto, L. (1927). *La Clinica Veterinara*, 50 pp. 114-116). Abstracted B.T.W. (1928), 44 p. 302.]

In typical anthrax in the pig there is a laryngo-pharyngitis with a swelling in the subparotid-pharyngeal region and difficulty in swallowing and breathing. However, atypical cases occur and these present (apart from a microscopical demonstration of the bacillus) some difficulty in diagnosis. The following illustrates this. A pig, perfectly well in the evening, was found dead next morning. Blood was present in eyes and nose, mucous membranes cyanotic, dark blue spots on ears and inner surface of thighs, rigor mortis absent, blood imperfectly coagulated and dark red, lungs œdematous with hæmorrhagic foamy contents. An acute septicæmia was the diagnosis. The remaining swine were quite healthy. Next morning one of these was found dead

(Continued at foot of next column.)

The Veterinary Record.

23rd June, 1928.

PRO PATRIA.

The seventh of June, 1928, marks a red letter day in the history of the Royal College of Veterinary Surgeons. For some time past the Council has had under consideration the provision of a tribute of honour and remembrance to those of our profession who gave their lives in their country's cause during the Great War. Money has been subscribed by the profession and with a grant in aid from the Carnegie (United Kingdom) Trustees, the Royal College has been enabled to carry into effect a scheme which the Council has always had in mind as the most fitting memorial, *viz.*, the establishment of a Central Library for Veterinary Science. Much careful thought has been exercised in its inception and planning out, but the time and money spent have brought the reward of an institution which will be not only increasingly useful, but which is altogether a delightful place, and certainly an honour to those for whom it serves as a memorial. The Council is to be congratulated on its achievement.

It was very appropriate, too, that the opening ceremony on the above-mentioned date should have been performed by the Principal Secretary of State for Dominion Affairs and for the Colonies—the Right Hon. L. C. M. S. Amery —for so much of our value as a profession is intimately bound up in the service and administration of our Empire overseas, and Mr. Amery has seen for himself, during his recent tour of the Empire, the importance which veterinary science bears to the development of civilisation in our distant lands. As he very aptly said in his opening remarks, progress or relative stagnation in tropical districts greatly depended on the elucidation and control of those diseases which were wont to prevail. He realised to the full the great potentialities of veterinary science and animal health, and their natural contact with agriculture. For this reason he was glad of the recommendation made at Headquarters for the establishment of an Advisory Council of Agriculture and Animal Health, with an Animal Health Committee. He was keenly alive to the necessity for the adequate staffing of veterinary services and adequate remuneration of workers. He was conscious that an essential point in development was the provision of libraries

(Continued from previous column).

with the same *post-mortem* except that no blood was present at the natural orifices.

On an adjacent farm a similar experience was observed. In this case microscopical examination of morbid material revealed anthrax bacilli. Sero-vaccination prevented any further outbreak.

It is worthy of note that in no case was spleen enlargement noted, nor was there swelling of the head-throat region. The chief lesion was the œdematous infiltration of the lungs.

and research facilities, as so much waste of effort attended or was buried in journals here and there. He therefore enthusiastically welcomed the establishing of the War Memorial Library, an instrument for scientific work, the foremost in the British Empire, complete in text books and journals, and he had every confidence that it would grow. In that spirit he was glad and proud to declare the Library open.

A very pleasing part of the ceremony, too, was the presence of Miss E. S. Haldane, LL.D., C.H., of the Carnegie (United Kingdom) Trustees, who was given a special welcome by the President; Dr. E. A. Baker, Principal of the London University School of Librarianship; Dr. William Bulloch, a frequent visitor to the Library and the Chairman of the Library Committee of the very extensive Library of the Royal Society of Medicine; Colonel Luxmore Newcombe, Librarian of the Central Library for Students—for the success of a Library of this nature lies in the assistance it can render to workers in allied sciences. To have an easy and up-to-date centre of reference in veterinary science and knowledge must afford a great boon to those workers desirous of comparative information. In course of time as literature is added, and for which there is ample room in the arrangement of the shelves and cases, it will be difficult to imagine a more complete store house of veterinary scientific matter. We should like to record a few of the very valuable treatises in possession of the Library and to commend them to the Royal College for very special keeping. Amongst these may be mentioned an original Latin edition of Harvey's "Circulation of the Blood," published in Rotterdam in 1649, the English Edition being published four years later; Blundeville's "Fower Chiefest Offices of Horsemanshippe," published in 1565; Leonard Mascall's "Government of Horses, Oxen and Cattle," published in 1591; Laffose's "Complete Treatise on Equine Medicine"—a French work, dated 1772, which was reputed to have cost £40,000 to produce and ruined the writer; several early editions of Markham's "Maisterpeece" of dates early in the 17th century.

Elsewhere in this week's issue of the *Veterinary Record* a full account of the opening ceremony will be found. At the same time through our columns we should like to convey to the President, the Sub-Committee of Council, and Secretary and Librarian our sincerest thanks for the great boon they have conferred on the profession and the care and thought they have taken in a matter which has been none too easy in these days when economy means so much. We think it right, too, to express our appreciation to the designer and architect of the Library—Mr. Salwey and Major Maule, of the firm of Messrs. Forsyth and Maule—for an institution in which they (and especially Mr. Salwey) have taken more than a personal interest and which in structure and appointment can only be described as beautiful. Lastly, in keeping with the spirit in which it was conceived and created, and significant of the motto "*Pro Patria*, 1914—1918" which adorns the mantelpiece, it is constructed solely of British oak and British material.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Eighty-fifth Annual General Meeting.

The Eighty-fifth Annual General Meeting of the Royal College of Veterinary Surgeons was held at the College, 10 Red Lion Square, London, W.C., on Thursday, 7th June, 1928, at 12 noon, with the President (Lieut.-Col. J. W. Brittlebank, C.M.G., D.V.S.M., M.R.C.V.S.) in the Chair.

The following were present:—Major J. Abson, Mr. A. E. Bayley, Mr. J. H. Carter, Mr. J. C. Coleman, Major G. W. Dunkin, Mr. H. Dyer, Major A. N. Foster, Professor F. T. G. Hobday, Mr. J. Holroyd, Mr. R. Hughes, Mr. T. Johnston, Mr. W. S. King, Mr. R. I. S. Leask, Mr. G. H. Livesey, Professor J. McCunn, Sir John M'Fadyean, Mr. J. W. McIntosh, Major-General Sir John Moore, Mr. A. M. Munro, Major G. B. Rees-Mogg, Mr. J. Rowe, Professor J. Share-Jones, Dr. A. Leslie Sheather, Lieut.-Col. P. J. Simpson, Mr. S. H. Slocock, Mr. Trevor F. Spencer, Captain W. K. Townson, Captain K. J. Urquhart, Captain S. Villar, Mr. E. Alfred West, Mr. J. Willett, Mr. E. Woodrow, Professor G. H. Wooldridge and Mr. A. J. Wright.

The SECRETARY read the Notice convening the meeting as it appeared in the *London Gazette* of 11th May, 1928.

The SECRETARY announced that apologies regretting their inability to attend the meeting had been received from Professor Bradley, Professor Buxton, Mr. Clarkson and Mr. Gofton.

The SECRETARY read the *Minutes* of the 84th Annual General Meeting, and they were signed as correct.

ELECTION OF COUNCIL.

The SECRETARY read the following report of the Chartered Accountants in connection with the annual election of Council: "We certify that we have checked the Voting Papers sent in for the Annual Election of 8 Members of the Council of the Royal College of Veterinary Surgeons, and the number of Votes obtained by the fourteen members nominated for the vacancies are set out below against their respective names.

"Thirty-eight Voting Papers were spoilt, and accordingly cancelled.

Name.	*Votes.*
J. M'Fadyean	851
J. B. Buxton	815
G. H. Wooldridge	794
J. Share-Jones	688
J. Clarkson	655
G. H. Locke	592
J. Willett	502
A. L. Sheather	499
D. S. Rabagliati	425
G. W. Dunkin	409
W. D. Rees	398
G. K. Walker	285
K. D. Downham	200
R. F. Wall	197

(Sgd.) Woodhouse and Wilkinson."

The PRESIDENT: It is my duty to declare that the following eight gentlemen are elected Members of the Council:—

Sir J. M'Fadyean, Professor J. B. Buxton, Professor G. H. Wooldridge, Dr. Share-Jones, Mr. J. Clarkson, Mr. G. H. Locke, Mr. J. Willett and Dr. A. L. Sheather.

Annual Report and Financial Statement.

The President: In presenting the Annual Report of the College, I wish to draw the attention of the meeting to one or two matters of more than usual interest. The report will then be taken page by page and I shall be glad to answer any questions on which you may wish further enlightenment.

It would be the desire of the Council to submit a full and more detailed report of their work, but having regard to the cost of circularising such a report free of charge to nearly 3,500 members it is necessary to confine it to a bare outline of the work that has been done.

With regard to Bye-laws, these are under constant scrutiny, and they are being continually improved upon. The Fellowship Regulations have now been brought into line with those of other learned bodies, and the Regulations for the Membership Diploma are also being thoroughly overhauled. The Examination Committee have a big task before them, and the fact that members of the Council of a representative body such as this must necessarily attend from long distances in some cases makes it very difficult to hold frequent meetings. We shall, however, I hope soon be able to report substantial progress in this work.

The year has been specially noteworthy in view of the prominence given to the Colonial Veterinary Services, and I would direct your special attention to the paragraphs at the foot of page three and on page four. We have made a special study of the conditions of service in the veterinary administrations overseas and have made recommendations to the Colonial Office which we hope will bear fruit in an improved service in the very near future.

Another matter on which special attention has been concentrated is the College Library. This is an institution of which the profession will have good reason to be proud. (Cheers.) It is now furnished in a style fitting its importance and is daily serving the needs of members all over the country. It has been said that veterinary surgeons do not read. While I do not endorse that statement, I think we can say that if there is any truth in it there will now be no excuse for any member of the profession remaining out of touch with what advances are being made in any branch of veterinary science in which he may be interested.

All those of you who can attend the ceremony at 3 o'clock this afternoon are cordially invited to be present to meet Mr. Amery, the Colonial Secretary, who has kindly undertaken to declare the War Memorial Library open.

Another event of importance was the conferring upon Sir John M'Fadyean of the Diploma of Honorary Associate of the College. (Cheers.) In the list of distinguished men whose names appear on the Roll, none can eclipse that of the acknowledged head of the veterinary profession of this country. (Cheers.) We hope that, though he has retired from the position of Principal of the Royal Veterinary College which he adorned for so long, we shall still have the immense benefit of his advice at meetings of the Council of the College for many years to come. (Cheers.)

Lastly, I would make a reference to the second appendix to the Annual Report. As the Council have now decided to set out in a notice to the profession what the rules with regard to professional conduct are, they have thought it well to circulate the notice to all members of the profession as part of the Annual Report. I trust that all members of the profession will read, mark, learn and inwardly digest this short statement. If they will do so, and guide their actions by it, it will, I am sure, have a beneficial effect on the standing of the profession throughout the country.

I will now put the Report to you page by page.

The President then put the Report page by page to the meeting, and, no questions being asked, the Report was received and adopted.

Financial Statement.

The President: I will now put to you the Financial Statement page by page. Although it is incorporated as part of the Report I have deliberately taken it separately because the Treasurer will be very glad to answer any questions that any member desires to ask with regard to the finances of the College. I may say that you are very well served by our Treasurer, who is most jealous of the interests of this College. (Hear, hear.) No expense is incurred which is not first of all thoroughly scrutinised by him and the Finance Committee. If no member desires to ask any question I will ask somebody to move the adoption of the Financial Statement.

On the motion of Mr. J. Willett, seconded by Lieut.-Col. P. J. Simpson, the Financial Statement was then unanimously adopted.

Presentation of Honours and Prizes.

Presentation of the John Henry Steel Memorial Medal to Professor J. T. Share-Jones and Professor G. H. Wooldridge.

The President: Having dealt with the more formal portion of the business, the next item on our programme is a distinctly pleasurable one, and that is to confer upon Dr. Share-Jones and Professor Wooldridge the John Henry Steel Memorial Medal. It is usual, I know, on occasions of this sort to expound at some length the virtues of the various recipients of medals and honours, but I propose to dispense with that, because in a small profession like ours everyone knows the work these two gentlemen have done. Dr. Share-Jones has his own special field, and I do not think I am exaggerating for a moment when I say that he is a recognised master of his subject throughout the world. (Cheers.) He is an author of some considerable note, and we as a profession owe much to him for the great work that he is doing. We hope that the award of this Medal will encourage him to go on and do still finer work for the profession. He is a man of immense capacity and energy, and I feel sure that his enthusiasm will urge him to do even greater work for the profession which he loves. Dr. Share-Jones, in asking you to accept this Medal, which is conferred upon you as a token of the recognition by the profession of the great work which you have done in years gone by, I express the sincere hope that it will be an urge to you to continue your beneficent work on behalf of the profession. (Cheers.)

(The President then presented the Medal, amid hearty cheering, to Dr. Share-Jones.)

Professor Wooldridge, as a teacher you have made a great mark in your profession. It would be invidious on my part to endeavour to pick out anything which you have specially done, because all your work has been so thoroughly carried out that the profession recognises in you a leader, a worker, and an enthusiast in the field which you have made your own. You have served the profession not only scientifically but politically, and it owes you much. I feel sure that, as in the case of Dr. Share-Jones, the bestowal of this Medal upon you will be an urge to you to continue your work, and that it will help you in the future to appreciate the great esteem in which you are held by your colleagues in the profession. I confer this Medal upon you with the very greatest possible pleasure, and I hope it will bring you great joy. (Cheers.)

(The President then presented the Medal, amid hearty cheering, to Professor Wooldridge.)

Dr. J. T. SHARE-JONES, in reply, said: I am deeply grateful to you, Sir, for your extremely kind and more than generous remarks, and to you, Gentlemen, for the hearty way in which you received them. There are occasions when a vocabulary is an altogether inadequate instrument as a means of giving outward expression to one's deepest and innermost feelings. Such an occasion is this to me. But embarrassing though it may be in some respects, as it undoubtedly is, an occasion such as this does serve one or two very definite purposes. It serves to remind us primarily of the great pioneer as a tribute to whose memory this beautiful Medal was originally endowed. But to me personally to-day it serves to remind me of our great indebtedness to some who have gone—to William Hunting, to Henry Power, and others whom I could name, whose inspiration was such that one could not help taking note of the advice which they gave and put forward one's best. But it also serves to remind me of our great indebtedness to many who are fortunately still with us. Of that indebtedness, I wish to give public expression now, if I may, Sir—to Simpson Shave, to James Macqueen, and above all to our revered John M'Fadyean. (Cheers.) There are two other names I would like to mention who are not in our profession, but to whom we as a profession have been much indebted up North: they are known to you, Sir: I refer to Rubert Boyce and Alfred Dale. If the bestowal of this medal serves no other purpose than reminding us of our indebtedness on occasions such as these, it has been well worth while. But it also serves another purpose; it serves the purpose of stimulating us to further endeavours in the future. A field is open for investigation which is of increasing national importance. It is one which presents a plethora of problems of a most engaging nature and one which presents an interest which is almost infinite. There is one word further I desire to say before sitting down, and that is, Sir, that if in your judgment and the judgment of my esteemed colleagues here I have been deemed worthy to receive this high honour at your hands, however I may in my innermost judgment differ from yours, my gratitude to you is unbounded. (Cheers.)

Professor G. H. WOOLDRIDGE, in reply, said: In accepting from you, Sir, this token of appreciation of the little efforts I have been able to put forward on behalf of the profession which, as has been truly said, I dearly love, I feel that I cannot adequately express my thanks for the great honour that has been conferred upon me, nor do I propose to attempt to do so. I think I am sufficiently well-known personally to most of you for you to realise the depth of my feeling much more readily than any words of mine can express them. Many of you may not realise that as a matter of fact I am a man of very few words—(laughter)—and I intend on this occasion, Sir, to prove it by not attempting to express at any length the gratitude I feel for the recognition that you have accorded to me for the little efforts I have been able to put forward in the past, which I hope to be able to continue in the future if I am spared. Thank you. (Cheers.)

FITZWYGRAM PRIZES.

The PRESIDENT than conferred the First Fitzwygram Prize on Mr. T. Johnson, M.R.C.V.S., and the Second Prize on Mr. E. Woodrow, M.R.C.V.S.

Addressing Mr. Johnson, the PRESIDENT said: I congratulate you on behalf of the Council, and I feel sure on behalf of the whole profession, on winning this Prize. I think it may safely be said that it is the aim of every industrious young man entering our profession to become the winner of the Fitzwygram Prize. But there can be only one winner, and it is a great honour that you have been successful in singling yourself out to receive this Prize. Mr. Johnston, let it be an urge to you to go on with the object of doing great work for your profession. The reward monetarily may not be large, but the field is a great one, and the reward of your own self-satisfaction and the gratitude of your fellows will, I am sure, be an ample recompense for your labours. I hope that your future will be as successful as even you yourself could wish it to be. (Cheers.)

(The President then handed the First Fitzwygram Prize to Mr. Johnson, amid hearty cheering.)

The PRESIDENT, addressing Mr. Woodrow, said: In handing you the Second Fitzwygram Prize let me also congratulate you, Mr. Woodrow, on your success. There can only be one Second Prize winner. Let me re-echo very largely what I have said to your fellow prize-winner—the hope that in years to come your work may be of increasing value to the veterinary profession. Look well to the honour of the profession which you have entered. I congratulate you. (Cheers.)

(The President, amid applause, then handed the Second Fitzwygram Prize to Mr. E. Woodrow).

WILLIAMS MEMORIAL PRIZE.

Mr. G. A. Moore, M.R.C.V.S., the winner of the Williams Memorial Prize, was unable to be present to receive the Prize from the President's hands.

WALLEY MEMORIAL PRIZE.

The PRESIDENT, in handing the Walley Memorial Prize to the winner, Mr. Alan J. Wright, said: I congratulate you, Mr. Wright, and I hope that, along with your fellows, you will go on and do noble service for the great profession which you have entered. I congratulate you. (Cheers.)

The PRESIDENT: That concludes the formal business of the Annual General Meeting. I thank you very much for your attendance and for your very kindly behaviour.

VOTE OF THANKS TO THE PRESIDENT.

Mr. J. C. COLEMAN: Before the meeting concludes I should like to propose a vote of thanks to the President for the admirable way in which he has filled the Chair.

Sir JOHN M'FADYEAN: I have great pleasure in seconding that, and I am sure it needs no speech to recommend it. All the members of the profession must have followed with interest, and I may say with admiration, the manner in which Colonel Brittlebank has conducted our business. (Cheers.) I think the profession is very fortunate in having had him as President of the College for the last two years. (Cheers.)

The resolution was then put and carried with acclamation.

The PRESIDENT: I do not propose to inflict a long speech upon you. I only desire to say how much I appreciate the very kindly way in which this vote of thanks to me has been moved, seconded, and carried. I do not think any thanks are deserved by the President, because after all, unless he has a good and loyal Council no President can carry on the business of this profession. I want to pay tribute now to the Council for the very kindly, very loyal, and very generous way in which they have at all times supported me during my two years as President of the Royal College. I am deeply grateful to them. It is not always easy to please everybody, but I can say that on no single occasion has the Council ever failed to back me with the fullest loyalty and the greatest possible kindness. I thank them all and the profession very much indeed. (Cheers.)

The meeting then terminated.

Opening of the New Library.

At three o'clock on the afternoon of the same day a meeting was held in the newly-furnished Library of the Royal College at which the Right Hon. L. S. Amery, M.P., Secretary for Dominion Affairs and Colonial Secretary, attended. He was supported on the platform by Miss Haldane, LL.D., representing the Carnegie (United Kingdom) Trustees, and the President. There were also present: Major J. Abson, Dr. W. Horner Andrews, Dr. Ernest A. Baker, Lieut.-Col. E. P. Barret, Mr. R. Bryden, Dr. William Bulloch, Dr. Thomas W. M. Cameron, Mr. J. C. Coleman, Major G. W. Dunkin, Mr. R. J. Foreman, Major A. N. Foster, Dr. and Mrs. Tom Hare, Professor F. T. G. Hobday, Mr. J. Holroyd, Mr. R. Hughes, Mr. W. S. King, Mr. G. H. Livesey, Sir John M'Fadyean, Mr. J. W. McIntosh, Mr. G. P. Male, Mr. F. H. Manley, Dr. F. C. Minett, Major R. E. Montgomery, Major-General Sir John Moore, Mr. A. M. Munro, Colonel Luxmore Newcombe, Captain A. O'Neill, Mr. W. Perryman, Lieut.-Col. H. A. Reid, Dr. J. Share-Jones, Dr. A. Leslie Sheather, Lieut.-Col. P. J. Simpson, Mr. S. H. Slocock, Professor A. R. Smythe, Mr. F. Trevor Spencer, Mr. Raymond V. Thatcher, Captain W. K. Townson, Mr. E. Alfred West, Mr. F. W. Willett, Mr. J. Willett and Professor G. H. Wooldridge.

The PRESIDENT: In the first place let me say how pleased the Council are to see so many here to assist us with this little function this afternoon. I hope you will permit me to detain you for a very few minutes while I briefly recapitulate the history of the establishment of this Library.

A sum of money was raised in the profession to in some way commemorate those seventy-six veterinary officers, Fellows and Members of this College, who lost their lives during the Great War. We first of all erected a mural tablet in oak, which you see just inside the entrance to this building, but we have been for a long time held back from the completion of our scheme for the establishment of this War Memorial Library by lack of funds. The Carnegie (United Kingdom) Trustees, however, generously came to our help with a grant of £400, subject to our becoming one of the out-lier libraries affiliated to the Central Library for Students. The whole of this money is being, and will be, devoted to the purchase of text-books and periodicals. Here let me say how very delighted we are to welcome amongst us this afternoon Miss Haldane—(cheers)—a very distinguished member of a very distinguished family. We are proud to have her here to grace this little function of ours. It was the receipt of this grant of £400 which encouraged us to go on to the completion of the larger scheme which you now see.

We have been fortunate in our advisers; and I want here to place on record our appreciation of the work done by Mr. Salwey, of the firm of Forsyth and Maule, and of Mr. Kerridge, the contractor, who has so faithfully interpreted Mr. Salwey's ideas. (Cheers.)

The Library contains over 6,000 volumes, including many rare and ancient books. Over 70 scientific periodicals are received, covering in addition to Veterinary Science and Surgery such subjects as Agriculture, Biology, Helminthology, Parasitology, Pathology and Bacteriology. I must refer specially to the collection of Annual Reports from the various Dominions and Colonial Veterinary Departments. This collection, valuable as it is now, will grow in value year by year. No other country imposes such a severe test upon its veterinary officers as does our own. Trained in this country, they exercise their profession overseas, dealing with elephants, camels, bullocks, cattle, sheep and horses in all kinds of climates and conditions. The history of veterinary education in the Colonies, as at home, can be written from the biographies of the graduates of the College who were the earliest pioneers; but such a history must be ever progressive, and it is to this end that we have established this our War Memorial Library, so that all who care may have available the best and latest in veterinary and allied literature. This Library of ours is unique in that there is no other Veterinary Library in the British Empire which can be compared with it.

Now let me say how pleased we are to welcome Colonel Amery—(cheers)—a very distinguished member of His Majesty's Government, the Secretary of State for Dominion Affairs and the Colonies. It would be impertinent of me to attempt adequately to put on record Colonel Amery's great services to the Empire. He has not hesitated to gather his facts first hand and so be properly acquainted with the many and intricate problems that lie before him. We venture to hope that he is this afternoon performing a further service to the Empire in coming here to open this Library. (Cheers.) I now call upon Colonel Amery to declare the Library open.

Colonel The Right Hon. L. S. AMERY (Secretary of State for Dominion Affairs and the Colonies), who was received

with cheers, said : I know that the honour you have done me in inviting me to open your Library this afternoon is a recognition of the fact that there is no science which has greater importance for the outer Empire to-day, or indeed in large measure for the old country itself, than your science of animal health—veterinary science ; and there is no wider field for its activity than is offered by the many diverse problems of the British Empire to which your President has just alluded. I certainly have been increasingly impressed, during the many years of my work at the Dominions Office and the Colonial Office, by the immense economic importance to the British Empire of the adequate development of the work of veterinary science. I have seen something personally in travelling round of what that work has meant. Not so long ago I spent a profoundly interesting day at that very remarkable institution at Onderstepoort in South Africa, which owes so much to the devotion and vision of that great veterinarian, Sir Arnold Theiler, whose services, though he has left Onderstepoort, are, I am glad to think, still being retained in the interests of the animal health of the British Empire. I learned something, therefore, of what scientific work in your field has meant to the whole development of civilisation in South Africa. There are many other points within the British Empire where veterinary science may mean all the difference between progress and relative stagnation—(cheers) ;—and if that is true of the great Dominions, it is no less true of the tropical Colonial Empire with which I have to deal in my capacity as Colonial Secretary. There you have a field peculiarly difficult perhaps because of the variety of its diseases, yet of great potentiality if those diseases can be overcome. It was a realisation of the importance of this field for the whole development of the Colonial Empire that led me, shortly before I left on my tour last summer, to convene a Special Committee of the Colonial Veterinary Services Organisation Committee to study the whole problem of how, in the Colonial Empire, we can adequately, both in staff and in methods of research, cope with this great problem.

Some of you may have read recently the Report of Lord Lovatt's Committee on Agricultural Research—a Report based on close consultation with the Colonial Veterinary Services Organisation Committee to which I have just referred. You will have seen that in that Report the recommendation is made—and I have every hope and intention of carrying it out—that there shall be at headquarters, in connection with the Colonial Office, an Advisory Council of Agriculture and Animal Health, that is to say, that your science and agricultural research shall be brought together in fruitful and natural contact in a single advisory organisation—an organisation which would then naturally break up into two main committees, one an Agricultural Committee, and the other an Animal Health Committee. With regard to the precise constitution and functions of that Committee and the development of the work of veterinary science throughout the Colonial Empire I am naturally looking forward with the keenest interest to the report that the Organisation Committee will, I hope, before long present to me. Anyhow, I can assure you that in the Colonial Office, as well as in such a body as the Empire Marketing Board, which in connection with the Dominions Office is concerned with the marketing of Empire produce in this country, we are keenly alive to the importance of veterinary science, to its development both on the research side and on the side of the provision of an adequate and adequately remunerated veterinary staff throughout the Colonies. (Hear, hear.)

The more I have studied the development in the Empire of any of these scientific developments, the more one becomes conscious of the fact that the absolutely essential instrument of any development, whether in study or research, is the provision of library and reference facilities. Without them the student is as helpless as a workman without his box of tools. More than that, I become inincreasingly conscious of the waste of effort that occurs in the field of research owing to the fact that so much valuable research already accomplished is buried in journals here and there, and simply through lack of facilities, which no individual research worker can accumulate for himself, is not accessible to other workers in the same field ; with the result that the same bit of work may be done over and over again and suggestions and clues of immeasurable importance are not available to those who are groping in one field of research or another. It is from that point of view that I enthusiastically welcome the decision your College has taken in devoting its War Memorial to the establishment of a Library both for the student and for the research worker, which I have no doubt, as you have said, Mr. President, will be the foremost Library of its kind in the British Empire. You have brought together, under convenient conditions for study, something which is more than a mere collection of books. It is a real instrument for scientific work—a collection interesting in its old historical evidences of early work in your field, but also complete in the most essential things—complete in its text-books, complete in its collection of journals dating right back for a century or more. I think you have done a very useful piece of work in the establishment of this Library. I have every confidence that the Library will grow steadily, and thereby increase in value ; and still more, I have the confidence and hope that it will, in an ever increasing measure, be used not only by students here, but by students from all over the Empire who, for one reason or another, visit London, where they will be able to exchange views and to increase their knowledge and their efficiency. Therefore, I am glad and proud to be able to declare this Library open this afternoon. (Cheers.)

Sir JOHN M'FADYEAN : I rise with much pleasure to propose that we accord a very hearty vote of thanks to Colonel Amery for having honoured us by his presence here to-day to declare this Library open. We all know that Colonel Amery is distinguished amongst all those who have held the high office which he now occupies by the trouble which he has taken to make himself personally and intimately acquainted with the problems with which his office has to deal. I am perfectly sure, from what we have just heard, that Colonel Amery is in sympathy with our work, and that he is well seized of the difficulties with which members of our profession carry on their work in the Overseas of the British Empire. The knowledge which he has gained will be of very great value, because we all know the importance of the personal touch which comes from first-hand knowledge. (Hear, hear.) I beg

to move that we accord Colonel Amery a very hearty vote of thanks for his presence here to-day.

Mr. J. W. McIntosh: I regard it as a great privilege and honour to be permitted to associate myself with the vote of thanks which has been proposed by Sir John M'Fadyean, and on behalf of the profession I second it most heartily.

The resolution was then put and carried with acclamation.

Colonel the Right Hon. L. S. Amery: Thank you very much.

The President: I should like to say that everything used in the construction of this Library is absolutely British. (Cheers.) We gave particular instructions to the architect that we would not for one moment have anything in the shape of foreign production.

I now desire to propose from the Chair, if you will permit me to do so, a vote of thanks to Miss Haldane for so kindly coming amongst us to-day. (Cheers.) I do not think we quite realise what her coming amongst us here has meant—what an encouragement it gives us to think that a lady who is so celebrated in literature has graced this meeting by her presence. She has served on a number of public bodies for many years, and her presence here this afternoon as the representative of the Carnegie (United Kingdom) Trust, with the object of encouraging us to go on still further, is particularly gratifying. It gives me the greatest pleasure to move a special vote of thanks to Miss Haldane for so kindly gracing our proceedings. (Cheers.)

The resolution of thanks was carried by acclamation.

Miss Haldane, who was received with cheers, said: May I say just one word of thanks to you for allowing me to be present to-day? You could not have given me more pleasure. I am a member, as you know, of the Carnegie Trustees, the Trust that was able to give a grant towards your Library. Our Chairman, Lord Elgin, is extremely sorry that he was not able to be present this afternoon, but I feel that is to my advantage, because I was allowed to come to represent the Trustees in his place. (Laughter.) The particular subject of veterinary science is, as Mr. Amery and the President have said, of enormous importance and it is one that has interested me greatly. I have served on several Committes which have dealt with the subject. I know something about the Scotch Colleges, but I knew nothing whatever about the Colleges here. I am delighted that you have got this beautiful Library. I hope you will allow me to say that it seems to me to be quite a delightful Library. It is very beautifully arranged, and I am sure the Carnegie Trustees will be delighted to know what a charming building you have got; and I also feel sure that, of our out-lier schemes, the scheme outside the Central Library, none probably will be more useful than the one which you have instituted to-day. Will you allow me, Mr. President, to thank you for permitting me to be present, and will you allow me to say what a pleasure it has been to me to accept your invitation. (Cheers.)

Personal.

Appointment.—Mr. E. F. McCleery, M.R.C.V.S., D.V.S.M., has been appointed Assistant Veterinary Officer to the Public Health Department of the Leeds Corporation.

CLINICAL AND CASE REPORTS.

Acid Poisoning in Cattle.

By J. R. Baxter, M.R.C.V.S.,
Lechlade.

I was called to a farm on a large estate near here, on May 24th, to see what was described as a case of red-water. On arrival, I found the estate men cleaning out water supply pipes with a commercial acid preparation, and was told by the owner of the cattle that he suspected this as being the cause of his cows' illness; he also stated that his milk supply had shrunk considerably through the whole herd.

Having carefully examined this first cow, I must say I was rather doubtful as to diagnosis, though the symptoms were quite compatible; however, while I was considering the matter, the owner happened to say he had another cow which was "dunging very thin," and he thought was "Johns," so I went to have a look at her and found practically the same symptoms, except that there was no history of redwater. Just as we were leaving, however, the animal very obligingly urinated, and there appeared exactly the same coloured urine as in the first case—not red, but a peculiar brown, almost like weak coffee or very weak cocoa, with a considerable addition of milk; this considerably strengthened the diagnosis and we decided to examine the whole herd, about thirty, with the result that I found two more with precisely the same symptoms and several others looking unthrifty, and with a somewhat fast pulse. I may say that this herd is usually in tip-top condition, so it was fairly easy to pick out those most off colour.

The Symptoms in Case *No.* 1 were: profuse watery diarrhœa, with a very unpleasant odour and the peculiarly-coloured urine I have mentioned before, respiration normal, pulse very fast and bounding, temperature 105 degrees, very tucked up and with rather rolling gait (this last, I think, simply from weakness, as she had been ailing and eaten practically nothing for two days).

No. 2. Exactly the same, except that she was feeding fairly well.

No. 3. Differed slightly in showing slight signs of colic, kicking at the abdomen, etc., otherwise the same.

No. 4. About the same as *No.* 2.

The outstanding features in all the cases were the pulse and temperature, the latter between 105-106 in all, and the heart's action was quite evident to any casual observer. There were several other cows with slightly raised temperatures but no other apparent symptom.

Treatment. Sod. bicarb., creta prep. aa. ℥i. given every four hours in oatmeal gruel. I am glad to say that all the cases responded wonderfully, even Case 1 being greatly improved on inspection next day. All have since done quite well.

The acid being used in the pipes was apparently just commercial HCl with the usual impurities.

I once thought I had seen most things in cattle practice, but this was quite a new experience, and I hope may be of interest to others.

Prolapse of the Intestine at the time of Parturition in a Mare.

By Henry Taylor, F.R.C.V.S.,
Hayward's Heath.

My attendance was requested recently at 6 o'clock one morning to a mare in a state of parturition, which had been found with the forelegs of the foal protruding from the vagina. It was surmised that the head was doubled back. On my arrival, I found that the attendant had pulled at the legs and the foal had come away, so they said, fairly easily, but that some intestine had come too. As the mare was standing up the curve of the loop of bowel almost reached to the ground. On further examination a part of the intestine nearest the vulva about six inches in length was noticed to be black, as if it had been out some time, and on questioning the men it was ascertained that the mass was there when they first arrived; it was after the delivery of the foal that the full length of intestine appeared.

Now here comes the interesting point. The bowel consisted of this portion, one invaginated into the other, and the middle portion of the outer gut had split, thereby exposing the inner one. The intestine was the floating colon and apparently the rupture of the vagina which allowed it to become prolapsed, was in its upper portion. The animal was destroyed as soon as possible. The mare had had one or two previous foals.

I remember some twenty years ago a similar case in which the intestines prolapsed to the extent of a basket-measure full, but, speaking from memory, these were the small intestines.

Report on Observations made on Caseous Lymphadenitis in Sheep.

By D. W. Mills, B.V.Sc., M.R.C.V.S., D.V.H.

The following observations were made on 433 lambs 4,170 wethers and/or maiden ewes, and 9,770 ewes rejected from 127,070 lambs, 91,582 wethers and/or maiden ewes and 42,337 ewes for caseous lymphadenitis during the inspection of sheep for freezing at Rio Seco Meat Works in Patagonia, 1928.

All the carcases were personally handled and certified as caseous lymphadenitis, and detailed notes were kept on 528 wethers and/or maiden ewes and 1,360 ewes.

Detailed Notes Tabulated.

Site of Lesion.	Ewes Affected. No.	Ewes Affected. %	Weth. &/or Mdn. Ewes Affected. No.	Weth. &/or Mdn. Ewes Affected. %
Extremities	1,067	78·45	417	78·97
Leg	408		174	
Precrural Lymph Gland ...	305		136	
Popliteal ,, ,, ...	87		19	
Caudal ,, ,, ...	16		19	
Shoulder.				
Prescapular ,, ,, ...	471		192	
Both Leg and Shoulder ...	178		45	
Precrur. and Prescap. Gland	156		45	
Popliteal and Prescap. Gland	22			
All 4 Extremities	10		6	
Trunk	185	13·63	52	9·85
Thoracic Cavity	158		50	
Abdominal Cavity	24		2	
Internal Iliac Lymph Gland	5			
Liver	7			
Peritoneum	9		1	
Spleen	3		1	
Thoracic and Abdominal Cavities	3			
Extremities and Trunk ...	50	3·66	21	3·98
Prescapular and Thorax ...	38		14	
Precrural and Thorax ...	8		7	
Popliteal and Thorax ...	2			
Precrural and Abdominal ...	1			
Prescap. Precr. and both Cavities	1			
Superficial	54	3·97	37	7·01
Sup. Inguinal (or Mammary) Gland	26		25	
Subcutaneous Tissues ...	28		12	
Other Tissues	4	·29	1	·19
Muscle	3		1	
Bone	1			

Remarks.

General. In studying the above table it must be borne in mind that:—

1. The statistics are compiled from the examination of dressed carcases.
2. The viscera, except for parts adhering to the carcase, could not be traced.
3. The lesions in the thorax comprised affection of one or more of the following: (a) suprasternal lymph gland; (b) mediastinal lymph gland; (c) lungs; (d) pleura; (e) pericardium.
4. The superficial lesions were ulcers, abscesses, pustules, whose contents had been exposed.
5. The kidneys had been removed from the carcases.

The Lesions in the Lymphatic Glands. Early Stages.

The glands shewed either a few whitish foci in the otherwise normal gland or an active inflammation of the whole gland, as evidenced by congestion, swelling, cloudiness, pallor, friability and hydræmia, the gland frequently being the size and shape of a Brazil or walnut. Sometimes only part of the gland was so inflamed, varying with the extent of the infection. These early lesions accounted for nearly half of the rejected lambs; they were less frequently found in the young sheep and seldom in ewes.

Common characteristic Lesions.

These were greenish purulent foci or masses sometimes found in an almost normal-sized gland, more commonly in one the size of a marble or walnut, though much larger ones were frequent in the shoulder. In these larger ones the entire lymphatic tissue was destroyed. One was noted to attain the size of a coconut and weighed 3 lbs. The green pus, at first in a mobile condition, dried and

became caseous, when it often appeared to have a layered formation like an onion.

The Final Stage.

If the gland through its purulent condition had not weakened at some point and pointed, as many shewed signs of doing (thus acting like an acute abscess) it was found in a contracted, hard, dry and sometimes gritty, calcified condition.

The Lesions in the Extremities.

These, especially the hind legs, frequently shewed an accompanying lymphangitis, sometimes pustular, sometimes ulcerative. A large percentage of the popliteal lesions were discovered because of a lymphangitis about the hock, and converging to disappear between the two bellies of the Gastrocnemius muscle. A further number of them was found because of the tendency for this gland when enlarged to be pushed to an almost subcutaneous position, appearing between the bellies of the aforementioned muscle.

The prescapular was frequently (1) Adhering to the subcutaneous tissue by a fibrosis extending through the Mastoido-Humeralis muscle; (2) Abscess-like, pointing through that muscle; (3) Free in the fat in front of the shoulder.

The precrural was occasionally accompanied by a pustular lymphangitis of the flank, and in some cases encased in fibrous tissue the thickness of ¼in., though more commonly it was free in the flank. The caudal glands at the root of the tail were sometimes so enlarged as to fill the pelvis.

The Thoracic Lesions.

The pleural lesions usually consisted of an inflammation of the pleuræ and an infected suprasternal lymph gland, only occasionally was there anything approaching a condition similar to "grapes" in tuberculosis of the cow.

By far the commonest lesion was an abscess of the anterior lobe of the left lung which was then found adhering to the pleura at the entrance to the thorax.

Only occasionally the pericardium was affected by apparently an extension of pleurisy.

The mediastinal glands were seen to have at times attained the size of a hen's egg.

The Abdominal Lesions.

These were few, only being found when a surrounding inflammation caused them to adhere to the peritoneum or they themselves were without the peritoneal sac, *e.g.*, the internal iliac lymph glands. While the kidneys were sometimes found to be considerably affected, it was impossible to correlate the affected kidney with its carcase. The kidneys examined shewed lesions varying from a simple infarction to multiple infarctions involving and destroying the whole kidney tissue. It appeared from an examination of about fifty diseased ones that some lesions encapsulated and worked their way to the surface, some being found resting in an indentation of that surface.

Liver abscesses, splenic abscesses and simple caseous deposits were found adhering to the peritoneum.

The only lymph glands found affected were the internal iliacs.

The Superficial Lesions.

Ulcers, pustules and abscesses formed the main part of the superficial lesions (not including lesions in the superficial inguinal or supramammary glands).

It was interesting to note that some had definitely resulted from the thorn-prick of a shrub very common in these parts, others from dog-bites, while it is very highly probable that infection of castration wounds and docking wounds produced the lesions in the inguinal and caudal regions respectively.

General Impressions and Conclusions.

The high percentage of lesions occurring in the limbs without body-lesions, the frequency of lymphangitis accompanying the popliterals lesions, the apparent infection of a simple solution of the continuity of the skin, and the frequent finding of very small foci in lambs' livers suggest it is a frequent inhabitant of the skin and in all probability of the soil—this latter is also supported by its prevalence on some estancias and total absence on others.

It could thus infect the navel at birth and affect the liver of the lamb; the tail at docking and infect the caudal gland; the scrotum at castration and infect the superficial inguinal gland; cuts at shearing and infect the neighbouring lymphatic gland; abrasions of the shoulder at parting and infect the prescapular lymphatic gland, and any skin affection, such as scabies. It could also be inhaled and cause the pneumonic lesions which are found without other lesions. It could then become generalised from either method of primary infection.

I have no evidence of an abdominal infection.

Can this Disease be controlled?

If the foregoing conclusions are correct, more care, cleanliness and antisepsis in parting, shearing, driving, docking and castrating the sheep should be an effective prophylatic.

Are the common sheep dips toxic to this Preisz-Nocard bacillus? Since dipping twice yearly is the common practice in Patagonia on both sides of the Straits of Magellan—from which parts the sheep were brought—it would appear as if the usual dips for scabies was not deadly to these bacteria, and that possibly if some ingredient deadly to them could be added and the sheep dipped immediately after castration, docking, and shearing the incidence of the, economically very serious, disease might be curtailed.

Its economic seriousness is apparent from the fact that about 27 per cent. of the ewes' carcases were rejected for caseous lymphadenitis at these works during this last season.

Arbroath Motor Car Mystery.

"Arbroath Burgh Police were engaged during the week-end in inquiries into the disappearance on Saturday of a motor car from a local parking stance," reported the *Glasgow Herald* on June 11th. "While doing business in the Auction Mart, Mr. A. Linton Robertson, veterinary surgeon, left his two-seater Morris Cowley car at a parking place adjacent to the mart. On his return he found that it had disappeared. The car, which contained veterinary surgeon's instruments, was yesterday discovered in Aberdeen."

REVIEW.

[The Meat Industry in the Argentine Republic. (L'Industrie du Viandes en Republique Argentine). Dr. JUAN E. RICHELET, Delegate from the Argentine Ministry of Agriculture. Report presented to the " Congres International du Froid " at Rome, April, 1928.]

This report deals with the evolution of the stock-raising industry in the Argentine Republic, traces the meat industry of the country from its small beginning to the important position it holds to-day and gives various personal views of the author on such subjects as meat inspection.

The report may be summarised under headings.

Stock Raising in the Argentine Republic. This subject is dealt with very fully and the author shows how, since the first horses, cattle, sheep and pigs were introduced to the country in the 16th century, various factors influenced the rearing and improvement of stock, not the least of which were the opportunities presented by the export of meat and bye-products. The first animals to be introduced were allowed to breed in the wild state : " estancias " were established, each consisting of many thousands of animals and at this time "hunting" was carried out, which meant the riding among the stock, slashing their hocks with hooks on the end of sticks and the subsequent slaughter of the maimed animals. Skins, tongues and fat only were removed and the carcases were left to the wild dogs and birds. Gradually the " corral " system made its appearance and in 1604 structures simulating modern abattoirs were erected. Limits were put on the number of animals killed for food and the killing of calves was forbidden. Various regulations were introduced, including the use of municipal abattoirs, the selling of meat in specified places only and at fixed prices, till in 1884 some of the present day abattoirs were erected.

At the beginning of the 17th century live animals and hides were allowed to be exported to Europe. Such export trade developed greatly and much of the wealth of the country was in the skins exported, *e.g.*, in 1658 a traveller to one of the Argentine seaports found twenty Dutch and two British sailing vessels, loaded ready to put to sea, each containing 13-14,000 skins as well as silver, etc. The skins were worth about four shillings each. Tallow and " tassajo " (dried meat in strips) were also exported.

Encouraged by the results of the sale of exports, the stock owners began to improve their stock by importing stud animals. It would appear that Merino sheep were the first stud animals to be imported. This was in 1794 and they came from Spain. In 1810 a further consignment arrived and formed the basis of the Merino blood in the country. In 1825 Southdowns arrived from Britain and Lincoln sheep were imported in 1840. By 1860 Stud Herds and Flocks were established in the country. Shorthorn cattle were imported from Britain in 1857 and there was a steady increase of the numbers imported and in the prices paid : this in 1925 as much as £13,500 was paid for a Shorthorn bull. The Rural Argentine Society has done a lot to assist in the improvement of stock by the shows and sales held under its auspices. The steady improvement in the number and quality of the stock in the Argentine Republic has been influenced very largely by the development of the " frozen " and " chilled " meat export trade and it is of considerable interest to quote figures from the Flock and Stud Books of 1925 which show how largely Great Britain has been drawn on for the supplying of stud stock. In 1925 in the Argentine Republic there were 327,000 cattle of which 88·8 per cent. were of British origin, 167,109 sheep, 90·45 per cent. of British origin, 23,942 horses, 60 per cent. British, and 39,200 pigs of which 75 per cent. were from British stock.

The Evolution of the Meat Industry.—While salted meat was exported in the 18th century, and the Liebeg Extract of Meat Co. began manufacturing meat extracts at Fray Bentos in 1863, it was realised that something could be done to ship meat in its fresh state to Europe, etc., and in 1868 the Argentine Republic offered the sum of 8,000 piastres for the best method of preserving meat in its fresh state. Live animals had been exported for many years till Britain closed her ports to Argentine cattle in 1900 because of an outbreak of foot-and-mouth disease. Since 1903 our ports have been entirely closed. Preserved meat was first imported into Britain in 1871. It is interesting to trace the history of the frozen and chilled meat industry and to note its influence on the development of the Argentine Republic. It would appear that prior to 1876 the U.S.A. had exported frozen meat to Britain by using natural ice. The discovery of artificial cold made it possible to export meat in the frozen state and, after many attempts, ships were fitted with apparatus which made possible the keeping of meat in the frozen state for many weeks. This discovery was responsible for the establishing of many large abattoirs and refrigeratories many of which were, and still are, in the hands of British capitalists.

The South African War caused a tremendous increase in the amount of frozen meat produced in the Argentine Republic and the improvement of stocks to meet the demands of the British market was begun.

Chilled meat was next produced ; a full description of the method is given in the report. It is of interest to note that the list of frozen, chilled and preserved meat and their by-products exported from the Argentine Republic comprises 13 commodities.

The author deals largely with the political side of the meat industry, referring to the various " pools " and " Conferences " which influence the price of meat and its production, and suggests remedies for their control. The author believes that the Argentine Republic is one of the ideal countries for the production of cattle and sheep to supply the world with meat in its fresh state at the cheapest rates.

During the late war much of the preserved and fresh meat supplied to the various armies was shipped from the Argentine Republic : this resulted in a tremendous increase in the amount of work done by the various refrigeratories and a large increase in the dividends paid.

Meat Inspection.—An account is given of the system adopted in the examination of cattle, sheep, etc., before and after slaughter. This apparently is excellent, judging by the reports issued by representatives of the various European countries who have visited the country from time to time : included here is the favourable report given by the representative from this country—the late Sir Stewart

(Continued at foot of first column next page.)

DIVISIONAL REPORT.

Central Division.

MEETING IN THE NEW R.C.V.S. LIBRARY.

The members of this Division had the privilege of meeting in the newly-appointed and exceedingly handsome Library of the Royal College, at 10 Red Lion Square, on Friday, June 8th, 1928. In view of the importance and interest to the clinician of the subject to be discussed—that of urine—the attendance was meagre for this Society, and many members are inclined to associate this diminution from the normal at two successive meetings with the newly-introduced practice of circulating the paper of the evening in advance.

The President (Captain W. R. Townson) occupied the Chair and there were also present: Captain L. S. Balls, Messrs. W. Brown, H. E. Bywater, Captain D. Reid Chalmers, Mr. I. A. Galloway, Dr. Tom Hare, Major H. Kirk, Mr. G. H. Livesey, Professors J. Macqueen and J. McCunn, Mr. J. W. McIntosh, Dr. F. C. Minett, Major-General Sir John Moore, Mr. W. Perryman, Captain Richard Scott, Dr. A. Leslie Sheather, Professor A. R. Smythe, Major R. F. Wall, Professor G. H. Wooldridge and Captain J. F. Macdonald, *Hon. Secretary*.

Visitors.—Messrs. N. S. Barron and F. Bullock, Dr. G. W. Clough, Messrs. J. F. R. Darbyshire, A. B. Orr and J. S. Steward.

The *Minutes* of the April and May meetings of the Division, having been published in the *Record*, were taken as read and were confirmed and signed.

Correspondence.

(1) From Messrs. H. Bell and F. J. Eardley, Captain J. D. Haywood, Principal F. Hobday, and Captain S. J. Motton, apologising for their inability to attend.

(2) From Dr. Juan E. Richelet, expressing appreciation of the action taken by the Division in forwarding to the Library of the R.C.V.S. the copy sent of his book, "The Meat Industry in the Argentine Republic." At the same time, Dr. Richelet forwarded another of his publications, "The Argentine and the Countries Consuming Frozen Meat."

(*Continued from previous page*).

Stockman. The author criticises the action of certain countries which demand that imported carcases should have the viscera attached for examination on arrival. Diseases referred to and the methods of examination for their diagnosis are tuberculosis, foot-and-mouth disease, caseous lymphadenitis of sheep, trichinosis, etc. The author is thoroughly in agreement with the view that the veterinary profession alone is capable of carrying out meat inspection and goes so far as to propose that the Governments of all countries should be recommended to make use of the veterinary profession only in carrying out such work.

The report is brimful of information and interest. The above is a very brief summary. Those interested in the import of meat cannot do better than procure a copy for their careful perusal.

It was agreed that the same course be pursued in regard to this work, and that the best thanks of the Society be accorded the donor.

(3) From the Secretary of the National Horse Association of Great Britain, covering a report of the Slippery Roads Committee of the Association and informing the Division that a Conference of delegates from all the Societies interested in the slippery condition of roads as affecting horses and livestock would be held at 12 Hanover Square, W, on June 12th, at which Conference the attendance of the Division's representative was invited.

Mr. W. Perryman, the representative, intimated that he had received both the report and the notification of meeting.

Nominations.—The following were nominated for election as Fellows of the Society: Captain H. S. A. Dunn (Hove), Mr. G. T. Matthews (Bedford), Mr. H. W. Steele Bodger (Tamworth), Miss K. W. Shedlock (Esher), and Captain H. W. Dawes (West Bromwich.) In this connection, Mr. G. H. LIVESEY said that the Fellows had that night further evidence of the President's very great activity on behalf of that Society, and he thought Captain Townson had achieved a record in the number of members he had introduced—(hear, hear)—and he did not think they should allow that opportunity to pass without offering him their most sincere congratulations and thanks. (Loud applause.)

The PRESIDENT suitably acknowledged the tribute.

Election of Representatives to the Council of the N. V. M. A.—These were appointed as follows: The President (in the room of Colonel Young, who is abroad), Professor James Macqueen (replacing Sir John Moore, a Vice-President of the N.V.M.A.), Principal F. Hobday, Major H. Kirk, Lieut.-Col. J. W. Rainey and the Hon. Secretary (*ex-officio.*)

At this point, the PRESIDENT extended a warm welcome to the visitors, proceeding to direct attention to the next item on the agenda, the discussion on the paper "Urine," prepared for that session's consideration by Major H. Kirk. The paper having been circulated to Fellows in advance, the President called upon Professor A. R. Smythe to open the discussion. [Major Kirk's paper is reproduced at the commencement of this issue of the *Record*. The report of the discussion will appear next week.—Ed.]

At the termination of the discussion, the PRESIDENT proposed a very hearty vote of thanks to Major Kirk for his paper, which, he said, represented a very great effort on the part of the essayist and which had promoted an interesting and fruitful discussion. It was undoubtedly a very valuable addition to their present series of papers. (Applause.)

Mr. PERRYMAN seconded the motion, which was carried with acclamation.

The PRESIDENT said that, before the meeting concluded he wished to say, on their behalf, that they felt particularly gratified that evening at being able to hold that meeting of the Central Veterinary Society in the new Library of the Royal College of Veterinary Surgeons. (Applause.) He hoped that the President and Council of the Royal College would in future grant them the privilege of using that beautiful room for their meetings. He was confident that they would agree with him that it was a room to be proud of and one worthy of their profession, and that other

bodies, when they saw it, would be justifiably jealous. (Hear, hear.)

He would like, also, to have placed on record in their minutes their appreciation of and thanks to the President and Council of the Royal College of Veterinary Surgeons for allowing the Society in the past the use of the Council Chamber, which they had so tastefully decorated. (Applause.)

The proceedings terminated with the passing of a vote of thanks to the President for his conduct of the meeting.

J. F. MACDONALD, *Hon. Secretary.*

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

July 2nd—Meeting of Editorial Committee N.V.M.A., 4-30 p.m.

July 4th—R.V.C.S. Annual Dinner, Hotel Victoria, W.C.2.

R.C.V.S. ANNUAL DINNER.

Readers are reminded that the Annual Dinner of the Royal College will be held at the Hotel Victoria, at 7 p.m., on Wednesday, July 4th. About forty guests have been invited, and among the acceptances may be noted the Minister of Agriculture, Mr. Guinness, who will propose the Toast of "The Royal College"; Col. F. E. Freemantle, M.P., who will respond for "Medical Science"; Sir G. L. Courthope, M.P., Chairman of the Agricultural Committee of the House of Commons, who will respond for "Agriculture"; the Presidents of the National Farmers' Union, the National Pony Association, and the National Federation of Meat Traders' Associations; Lord Lovat, Under-Secretary of the State for the Dominions; Dr. Graham-Little, M.P.; Sir Rennell Rodd, M.P.; Prof. W. Bulloch, M.D., and others. This year's dinner promises to be of exceptional importance, and all members who can possibly attend should do so. Decorations will be worn. Tickets, price 12/6, exclusive of wines, should be applied for as soon as possible in order to facilitate the arrangement of tables. Applications, with remittance, should be addressed to the Secretary, R.C.V.S., 10 Red Lion Square, W.C.1.

ADVANTAGES OF HORSED TRANSPORT.

Encouraging reports of the trade in horses during the past months are reported from several quarters. Speaking at the Liverpool horse parade recently, a transport manager said that "as a result of inquiries concerning our own experience and that of several firms and Government departments, I am quite convinced that we have all been going wrong in this recent movement towards motors, and that it would be much more profitable to those people engaged in the distributive trade to utilise the service of horses in dealing with comparatively small and congested areas where they have frequent stops."—*The Dairy.*

PRESERVING THE HACK.

"Ever since its establishment the Richmond Show has been famous for large classes of horses of exceptional quality, but never have such large classes been seen as at the present show," reported *The Times.* "And it should be noted that these large classes have been conspicuous in the section devoted to hacks, which have always made a leading feature at the Richmond Show. This is an important matter, and the increase in the number of entries in the hack classes is decidedly encouraging to horse-breeders. The good work done by the Richmond Show in encouraging the development and improvement of the hack can scarcely be over estimated, and had it not been for this, and that the Richmond Show got a following at important shows, we might well have lost the fine type of hack for which the country has been famous for centuries."

PERSONAL.

Appointments.—Mr. James T. Forbes, M.R.C.V.S., has been appointed municipal veterinary surgeon for Singapore.

After qualifying at the Royal (Dick) Veterinary College, Mr. Forbes practised at Colchester for the past two and a half years.

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Mr. D. L. M'Linden, M.R.C.V.S., who left Glasgow 2½ years ago to fulfil a Government appointment with the Board of Agriculture, New Zealand, has recently been appointed lecturer on Veterinary Pathology and Animal Husbandry to the Massey Agricultural College, New Zealand.

R.C.V.S. OBITUARY.

EBBITT, Richard, Papillon, Nebraska, U.S.A. Graduated Glasgow, 29th April, 1881. Died, 23rd March, 1928.

JORDAN, Walter David, Glais House, Glais, near Swansea. Graduated, London, 15th July, 1910. Died, 8th June, 1928.

REID, Robert, Cromer House, Cupar, Fifeshire, Graduated, Edinburgh, 22nd July, 1885. Died, 9th June, 1928, aged 63.

WASHFORD, Jeremiah, New Romney, Kent. Graduated, London, 22nd April, 1868. Died 11th June, 1928, aged 83 years.

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"The death took place with tragic suddenness at Glais House, Glais, yesterday, of Mr. Walter D. Jordan, the well-known veterinary surgeon," says the *South Wales News* of 9th June.

"Deceased who was 43 years of age, retired to bed as usual on Thursday night although he had complained of septic poisoning in the arm. Yesterday morning, in response to an urgent call, he was up and prepared medicine for a farmer who had called, but later returned to bed. About an hour later, when his mother, Mrs. Jordan, wife of Councillor John Jordan, went into his bedroom, she was horrified to find that her son was dead.

"News of Mr. Jordan's death was received with surprise in the district, where he was well known and respected. He had practised in the district for a number of years and some years ago was a well-known exhibitor of hunters and hackneys at South Wales shows, also being in keen demand as a judge."

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Concerning the late Mr. Robert Reid, the *Glasgow Herald* says:—"Mr. Reid, who was in his sixty-fourth year, was

the elder son of Mr. Andrew Reid, veterinary surgeon, Auchtermuchty, and began life in the office of the Town Clerk of Falkland. After qualifying at Edinburgh, he was for a short period with his father, and went to Cupar in 1892. He built up a large practice, and was veterinary surgeon for the Highland Society's show at Cupar in 1912. He retired two years ago. He was a skip and past president of Cupar Curling and Bowling Clubs. He is survived by his wife."

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Death of Dr. W. J. Howarth.

Many of our readers will be aware of the active and sympathetic association which existed between members of our profession who are concerned with the improvement of the system of meat inspection in this country, and Dr. William James Howarth, C.B.E., M.D. for 15 years Medical Officer of Health for the City of London. He resigned last March, after a long and serious illness, and we regret to record that on June 18th he passed away, at Gerrard's Cross, at the age of 59.

At a meeting of the Corporation at the time of his resignation, the chairman of the Sanitary Committee said that Dr. Howarth had fully justified their choice of him for that responsible position. He had particularly interested himself in the question of meat inspection and the Government regulations on the subject were largely due to his representations. A resolution expressing deep appreciation of his valuable services was passed unanimously, and it was resolved to have it emblazoned and presented to Dr. Howarth.

During the War, Dr. Howarth was chief rationing officer under the London and Home Counties rationing scheme, and was created C.B.E. He was Milroy lecturer of the Royal College of Physicians in 1917, had served on various committees of the Ministry of Health, and was actively associated with the Incorporated Society of Medical Officers of Health, the Royal Sanitary Institute, and the Royal Institute of Public Health. He wrote on the medical inspection of schools, on the functions of the thyroid gland, and on other professional subjects.

In Parliament.

On June 15th, the House of Commons went into Committee on the Dogs Act (Amendment) Bill.

Mr. Briggs moved an amendment to provide that a person who finds a stray dog must take it to the nearest police station, and shall be allowed, if he so desires, to keep the dog, but for a period of not less than one month.

The amendment was agreed to.

The Bill was reported to the House and was read a third time.

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The Bill promoted by the Zoological Society of London, seeking powers to lay out, develop, and use the whole or any parts of the Whipsnade Estate, near Luton, as a zoological park, as a breeding ground and place of exercise for animals, and as a sanctuary for British wild flora and fauna has been passed for third reading by the Unopposed Bills Committee of the House of Lords.

International Cancer Conference.

The programme for the International Conference arranged by the British Empire Cancer Campaign was issued on June 15th. The conference will be held at the House of the Royal Society of Medicine in London and will extend from July 16th to July 22nd.

Among the subjects to be discussed are the relative values of surgery and radiation in the treatment of cancer in various sites, the etiology of cancer, occupational cancer, geographical and racial prevalence of cancer and public action in regard to cancer. Delegates of the highest distinction are coming to attend the conference from all parts of the world.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

June 15th. Major (Bt. Lt.-Col.) W. A. Jelbart retires on retired pay (June 16th).

Regular Army Reserve of Officers.

Bt. Lt.-Col. W. A. Jelbart (Major, retired pay) to be Lt.-Col. (June 16th), with seniority September 29th, 1926.

Kettering's Cows.

Mr. Trevor F. Spencer, M.R.C.V.S., inspector for Kettering and District, has submitted to the Kettering and District Joint Dairies Committee, a lengthy report on some 150 farms. "The report showed," states *The Dairy*, "that the general conditions of the dairy farms in the district was for the most part satisfactory, although in two cases it was considered that the cows were better housed than their owners. The total number of cows kept was 1,748. The report was accepted and was considered as most satisfactory and a great improvement on the last one. The chairman remarked that it was probably the most satisfactory report they had ever had, and they could now say that nearly 85 per cent. of the milk in the Kettering district could be said to be produced under reasonable conditions."

H.M. Stationery Office Publications.

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2., and 28 Abingdon Street, S.W.1; Cardiff: 1 St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120 George Street.

	Price Net. s. d.	*Post Free.* s. d.
Command Paper.		
3117. Agriculture in India. 14th Interim Report of the Royal Commission, January 1928	0 1	0 17
Agriculture, Ministry of:—		
Dairy Cattle Register of, with Authenticated Milk Record for the year ended October 1st, 1927. Vol. II. (24—0022—11—00)	1 0	1 0
India Office:—		
Agriculture in India. Royal Commission on. Vol. XIII. Evidence taken in Bihar and Orissa. (70—0186—13—00)	6 3	7 0

A farmer wanted a horse for short journeys, so he went to the fair, and selecting one for £4 10s. tendered a £5 note.

"Sorry," said the dealer, "I have no change. Better take another horse for it—one of the end ones. Don't touch the middle ones, else the whole lot'll fall down."—Newsman in the *Daily News and Westminster Gazette*.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the Yorkshire Division N.V.M.A., from Mr. T. C. Hall, Hon. Secretary.

Report of the Chief Veterinary Surgeon, Southern Rhodesia, for the year 1927.

Administration report of the Government Veterinary Surgeon, Ceylon, for the year 1927.

Department of Agriculture, Punjab Veterinary Bulletin No. 18: Report of the work performed by the officer in charge of the Canine Specialist's office, Sohawa, for the year 1926—27.

Communications from Mr. V. P. Gokhale, Captain J. R. Rider, and Dr. A. Leslie Sheather.